

MATERIALS TOWARD A MONOGRAPH OF THE GENUS VITEX. III

Harold N. Moldenke

VITEX Tourn.

Additional literature: Rumph., *Herb. Amboin.* 3: 28, pl. 14. 1743; Roem., *Script. Hisp.* 126, pl. 7, fig. 21. 1796; Vahl, *Eclog. Amer.* 2: 50, pl. 18. 1798; Sw., *Prod. Veg. Ind. Occ.* 93. 1799; Sw., *Fl. Ind. Occ.* 2: 1076--1077. 1800; Willd., *Sp. Pl.* 3: 392--393. 1801; Petit-Thouars, *Gen. Nov. Madag.* 8. 1811; Poir. in Lam., *Encycl. Bot. Suppl.* 2: 257. 1811; H.B.K., *Nov. Gen. & Sp. Pl.* 2: 246. 1818; Steud., *Nom. Bot.*, ed. 1, 194 & 888. 1821; Sabine, *Trans. Hort. Soc. Lond.* 5: 455. 1824; Spreng., *Syst. Veg.* 2: 757. 1825; Blume, *Bijdr.* 8: 3. 1826; Spreng., *Syst. Veg.* 3: 77. 1826; Wall., *Numer. List [48]*. 1829; Benth., *Ann. Nat. Hist.* 2: 149. 1839; Steud., *Nom. Bot.*, ed. 2, 2: 777. 1840; Miq., *Fl. Ind. Bat.* 2: 863. 1856; Seem., *Trans. Linn. Soc. Lond.* 23: 9. 1860; Kurz, *Journ. As. Soc. Beng.* 42 (2): 101. 1873; Kurz, *For. Fl. Brit. Burma* 270. 1877; J. G. Baker, *Journ. Linn. Soc. Lond.* *Bot.* 20: 227. 1883; Baill., *Bull. Soc. Linn. Paris* 1: 686. 1887; Sessé & Moc., *La Naturaleza*, ser. 2, 1: app. 103. 1889; K. Schum. & Hollr., *Fl. Kais. Wilhelmsl.* 121. 1889; J. G. Baker, *Journ. Linn. Soc. Lond.* 25: 341. 1890; Hook., *Icon. Pl.* 23: pl. 2240. 1892; Baill., *Hist. Pl.* 11: 116. 1892; Jacks., *Ind. Kew.* 2: 1213. 1895; DeWild. & Th. Dur., *Bull. Soc. Bot. Belg. Compt. Rend.* 38: 134. 1899; Th. Dur. & DeWild., *Mat. Fl. Congo* 5:15. 1899; Hiern, *Cat. Afr. Pl. Welw.* 4: 835. 1900; K. Schum. & Lauterb., *Fl. Deutsch. Südsee* 524. 1900; DeWild. & Th. Dur., *Contr. Fl. Congo* 2: 50. 1900; DeWild. & Th. Dur., *Reliq. Dewevr.* 184. 1901; *Bull. Torrey Bot. Club* 29: 597. 1902; DeWild., *Etud. Fl. Bas- & Moyen-Congo* 72. 1903; Briq., *Ann. Conserv. & Jard. Bot. Genev.* 7--8: 319. 1904; Huber, *Dol. Mus. Goeldi* 5: 218, pl. 4. 1908; Hochr., *Ann. Conserv. & Jard. Bot. Genev.* 11--12: 93. 1908; Th. Dur., *Syllag. Fl. Congol.* 436--437. 1909; DeWild., *Etud. Fl. Bas- & Moyen-Congo* 129. 1909; Pulle in Lorentz, *Nova-Guinea* 8 (4): 685. 1910; Mildbr., *Ergebn. Zentral-Afrik. Exped.* 2: 12. 1910; De Wild., *Compagnie du Kasai* 401. 1910; Glaz., *Bull. Soc. Bot. France Mém.* 3: 547. 1911; A. Chev., *Sudanica* 71. 1911; DeWild., *Fl. Bas- & Moyen-Congo* 467. 1912; A. Chev., *Etud. Fl. Afr. Cent. Franç.* 1: 243. 1913; Sm. & Ramas, *Rec. Bot. Surv. India* 6: 31. 1914; Kerr., Philip. *Journ. Sci. Bot.* 11: 310. 1916; Heyne, Nutt. *Plant. Nederl. Ind.* 4: 112. 1917; H. Hallier, *Med. Rijks Herb. Leid.* 37: 47. 1918; G. F. W. Mey., *Prim. Fl. Esseq.* 218--219. 1918; Britton & P. Wils., *Mem. Torrey Bot. Club* 16: 98. 1920; Pittier, *Contrib. U. S. Nat. Herb.* 20: 434--487. 1922; Record & Mell, *Timbers Trop. Am.* 525--527. 1924; H. J. Lam in Engl., *Bot. Jahrb.* 59: 92. 1925; Pellegrin, *Bull. Mus. Hist. Nat. Paris* 33: 268. 1927; Heyne, Nutt. *Plant. Nederl. Ind.* 1315--1316. 1925; Standl., *Trop. Woods* 16: 26, 29, & 32. 1928; Dop, *Bull. Soc. Hist. Nat. Toulouse* 57: 199. 1928; Pellegrin, *Mém. Soc. Linn.*

Normand., sér. nouv., Bot. 1 (3): 49--50, pl. 2. 1928; Hill, Ind. Kew. Suppl. 7: 252. 1929; Curran, Trop. Woods 19: 31. 1929; Standl., Publ. Field Mus. Bot. 4: 256. 1929; Seckt, Rev. Univ. Nac. Cordoba 17: 19, pl. 17, fig. 485. 1930; DeWild., Plant. Bequaert. 5: 7--8. 1932; Moldenke, Phytologia 1: 17--18. 1933; Moldenke, Torreya 33: 67. 1933; Hill, Ind. Kew. Suppl. 8: 249. 1933; Parodi, Rev. Argent. Agron. 1: 202. 1934; LeCointe, A Amaz. Brasil. III Arv. e Pl. Uteis 429. 1934; Trab. Inst. Bot. y Farm. 54: 79. 1935; Moldenke in Fedde, Repert. 40: 196. 1936; Pellegrin, Bull. Soc. Bot. France 84: 644. 1937; Latzina, Lilloa 1: 189. 1937; Fletcher, Kew Bull. 1938: 433. 1938; Pittier, Supl. Plant. Usuel. Venez. 55. 1939; Moldenke, Trop. Woods 64: 31--32. 1940; Biswas, Indian Forest. Rec. Bot., new ser., 3: 42. 1941; Kanehira & Hatusima, Bot. Mag. Tokyo 56: 115. 1942; F. C. Hoehne, Relat. Anual Inst. Bot. 44. 1947; Ragonese & Martinez-Crovetto, Revist. Invest. Afric. 1: 197 & 202. 1947; P'ei, Bot. Bull. Acad. Sci. 1: 4. 1947; Perrier de la Bâthie, Not. System. 13: 290--291. 1948; Aubrév., Fl. Forest. Soudano-Guin. 504. 1950; F. C. Hoehne, Ind. Bibl. e Num. Pl. Col. Com. Rondon 350--351. 1951; Stellfeld, Trib. Farm. 19 (10): 170--171. 1951; Moldenke, Phytologia 3: 428--448 & 486--488. 1951; Biol. Abstr. 26: 3851. 1952; Creig-Smith, Journ. Ecology 40: 289, 290, 292, & 309. 1952; Lindeman, Veget. Coast. Reg. Suriname 116 & 118. 1953; Lombardo, Invent. Pl. Cult. Montevid. 235 & 248. 1954; Romero Castañeda, Caldasia 7 (31): 49--50. 1955; Müllenders, Webbia 11: 510. 1955.

Additional excluded species:

- Vitex ahernianum Merr. = Teijsmanniodendron ahernianum (Merr.) Bakh.
Vitex bankae H. J. Lam = Teijsmanniodendron ahernianum (Merr.) Bakh.
Vitex bantamensis Koord. & Val. = Vavaea bantamensis (Koord. & Val.) Koord. & Merr., Meliaceae
Vitex bogoriensis H. J. Lam = Teijsmanniodendron ahernianum (Merr.) Bakh.
Vitex bogoriensis H. J. Lam = Teijsmanniodendron ahernianum (Merr.) Bakh.
Vitex clarkeana King & Gamble = Teijsmanniodendron hollrungii (Warb.) Kosterm.
Vitex collina Beauvis. = Neorapinia collina (Montr.) Moldenke
Vitex cymariooides Lam & Meeuse = Garrettia siamensis Fletcher
Vitex denudata Reinw. = Viticipremna philippinensis (Turcz.) H. J. Lam
Vitex flabelliflora Hall. f. = Teijsmanniodendron bogoriense Koord.
Vitex guajaci Ettingsh. = Premna lignum-vitae (A. Cunn.) Pieper
Vitex guaiaci A. Cunn. = Premna lignum-vitae (A. Cunn.) Pieper
Vitex holophylla Baker = Teijsmanniodendron holophyllum (J. C. Baker) Kosterm.
Vitex hollrungii Warb. = Teijsmanniodendron hollrungii (Warb.) Kosterm.
Vitex koordersii H. J. Lam = Teijsmanniodendron pteropodum (Miq.)

Bakh.

Vitex laevigata Herb. Madr. = Psychotria connata Wall., Rubiaceae
Vitex macrocalyx Baker = Holmskioldia microcalyx (J. C. Baker)

Pieper

Vitex microcalycina J. G. Baker = Holmskioldia microcalyx (J. G. Baker) Pieper

Vitex moluccana Miq. = Gmelina moluccana (Blume) Backer

Vitex novoguineensis Kaneh. & Hatus. = Teijsmanniodendron novo-
guineense (Kaneh. & Hatus.) Kosterm.

Vitex sakondriensis Drake = Buddleia sp., Loganiaceae

Vitex sarawakanus H. H. W. Pearson = Teijsmanniodendron sarawakan-
um (H. H. W. Pearson) Kosterm.

Vitex simplicifolia C. B. Clarke = Teijsmanniodendron hollrungii
(Warb.) Kosterm.

Vitex smilacifolia H. H. W. Pearson = Teijsmanniodendron smilaci-
folium (H. H. W. Pearson) Kosterm.

Vitex subspicata Hall. f. = Teijsmanniodendron subspicatum (H. Hallier) Kosterm.

Vitex tetragona H. Hallier = Teijsmanniodendron sarawakanum (H. H. W. Pearson) Kosterm.

Vitex venosa H. J. Lam = Teijsmanniodendron coriaceum (C. B. Clarke) Kosterm.

Record and Mell in the reference cited above discuss the wood anatomy of Vitex in general and also common names applied in general to species of this genus in tropical America.

VITEX AGNUS-CASTUS f. LATIFOLIA (Mill.) Rehd.

Additional literature: Lombardo, Invent. Pl. Cult. Montevid. 235. 1954.

VITEX CALOTHYRSA Sandw.

Citations: VENEZUELA: Bolivar: Spruce 3356 [Macbride photos 17564, 30185, and 34299] (B--isotype, Bm--isotype, Br--isotype, Cb--isotype, Cb--isotype, Ed--isotype, F--663043--photo of isotype, F--876591--photo of isotype, F--923106--photo of isotype, F--976277--photo of isotype, K--type, K--isotype, Kr--photo of isotype, Kr--photo of isotype, Kr--photo of isotype, Lu--isotype, N--isotype, N--photo of isotype, N--photo of isotype, N--photo of isotype, P--isotype, V--isotype, X--isotype). BRAZIL: Amazonas: Ducke 505 (F--902173, N, S), 23764 (B, K, N, N--photo, S, Ut, W--1574616, Z--photo); Frôes 22393 (Be--28932, N); R. H. Schomburgk 1009 (B, B, Bm, Cb, K, K, K, P); Ll. Williams 14993 (Ve--12874).

VITEX CANESCENS Kurz, Journ. As. Soc. Beng. 42 (2): 101. 1873.

Synonymy: Vitex canescens Wall., Numer. List [48], no. 1757. 1829. Vitex canescens f. subglabra P'ei ex Moldenke, Alph. List Invalid Names 52, in syn. 1942.

Literature: Wall., Numer. List [48], no. 1757. 1829; Kurz, Journ. As. Soc. Beng. 42 (2): 101. 1873; Kurz, For. Fl. Brit. Burma 270. 1877; Jacks., Ind. Kew. 2: 1213. 1895; Fletcher, Kew

Bull. 1938: 433. 1938; Moldenke, Prelim. Alph. List Invalid Names 50. 1940; Biswas, Indian Forest. Rec. Bot., new ser., 3: 42. 1941; Moldenke, Alph. List Invalid Names 52. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 55, 57-60, & 102. 1942; P'ei, Bot. Bull. Acad. Sci. 1: 4. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 128, 129, 132, 135, 137, 138, & 200. 1949.

Collectors describe the species as a shrub, medium-sized tree, or tree, 3 to 20 meters tall, with a trunk 20-60 cm. in diameter at breast height. The bark is said to be gray or dark-gray and smooth, the wood yellowish when cut, darker on exposure; the leaves light lustrous-green above, pale-green beneath; the flowers creamy-white, light-tan, buff, whitish-yellow, or yellowish with the lower lip purplish, "with a slight odor" or fragrant; the fruit is green when young (May to August), black when mature (November).

It has been collected on rocks, in sandy open forests, in open woods and thickets, in densely shaded ravines, on open riverbanks, and along roadsides on rocky slopes, at altitudes of 230 to 2000 meters, flowering in March, April, and June, and fruiting in May, July, August, November, and December. The To & Ts'ang specimen in the Britton Herbarium at New York, cited below, has a label inscribed "12.5 cm. tall", obviously an error for "12.5 m." Mistakes like these illustrate one of the fundamental weaknesses of the metric system of measurement. Charoernmayu states that in Thailand the species grows in deciduous forests. It is said to be common in Kwangsi, China. P'ei records it from Szechuan, but I have not seen any authenticating specimens as yet from that province. The type was collected at Prome in Upper Burma, but the Griffith 6066 collection cited below is not the type collection, as someone thought who inscribed the Torrey Herbarium specimen of this number as "isotype". The type of V. canescens Wall. is also from Prome and it seems obvious that the two names are conspecific.

Specimens of this species have been misidentified in herbaria as Vitex heterophylla Roxb., V. quinata (Lour.) F. N. Will., and V. vestita Wall. Common names recorded for the species are "cây ba ghat", "ching moi", "pa sien", and "smaw kanon".

V. canescens f. subglabra was based by P'ei on Tsang 6225 which is in the fruiting stage. It seems, however, that the sub-glabrous lower leaf-surfaces exhibited by this collection are found on all fruiting specimens of the species, while the pubescent surfaces are present only on flowering specimens. I do not, therefore, think that the form is a valid taxon.

Fletcher, in the reference cited above, cites the following specimens from Thailand: Kerr 1705, 1766, 5970, 12845, 15382, 19246, and 21108, Marcan 2170, Smith 761, Vanpruk 143 and 425, and Winit 31 and 256, not as yet seen by me.

Citations: INDIA: Assam: Chatterjee s.n. [Wathigau, June 1902] (Po--63138); Jenkins s.n. (Bz--23807); Kurz s.n. (Bz--23810, Er); Simons s.n. [Khasia Hills] (Bz--23805, Bz--23806). Manipur: Mee-

bold 6851 (S), 7470 (S). State undetermined: Simons s.n. [Gowhat-
ey; Colonial Herb. 16231] (Na); Voigt s.n. [Ind. orient.] (Cp,
Cp, Cp, Cp, Cp, E--photo, N--photo, Z--photo). CHINA: Hupeh: E.
H. Wilson 408 (Gg--31496). Kiangsi: Tsiang 10561 (N). Kwangsi:
Ching 6315 (N), 6582 (N), 7625 (N). Kwangtung: Herb. Canton Chr.
Coll. 12882 (S); To & Ts'ang s.n. [Herb. Lingnan Univ. 12882]
(N). Kweichow: Stewart, Chiao, & Cheo 936 (N, S); Tsiang 6225
(N, S). Yunnan: Henry 9567 (N, N--photo), 10654 (N). HAINAN IS-
LAND: How 70722 (N), 70831 (N, N); Lau 1652 (N). INDOCHINA: Annam:
Poilane 6054 (Bz--72848); Squires 814 (Er, N, S). Cambodia:
Béjaud 522 (N); Pierre 648 (N). Cochinchina: Pierre 1839 (Bz--
25446, N). THAILAND: Charoenmayu 399 [Herb. Royal Forest Dept.
11520] (Z); Herb. Royal Forest Dept. 106 (N); Kostermans 719 (Bz--
73301). LOCALITY OF COLLECTION UNDESIGNATED: Griffith 6066 (T).

VITEX CAPITATA Vahl, Eclog. Amer. 2: 50, pl. 18. 1798.

Synonymy: Limia Vand., Fl. Lusit. 42--43, pl. 3, fig. 21.
1788. Vitex bignonoides H.B.K., Nov. Gen. & Sp. Pl. 2: 246.
1818. Vitex brasiliensis Steud., Nom. Bot., ed. 1, 888. 1821
[not V. brasiliensis Mart., 1847]. Petraea bignonoides H.B.K.
apud Pittier, Supl. Plant. Usuel. Venez. 55, sphalm. 1939. Vitex
wittrockiana Moldenke, Geogr. Distrib. Avicenn. 20 & 27, nom.
nud. (1939); Phytologia 2: 31--32. 1941. Vitex capitata Anderson,
in herb. Vitex capitata L., in herb. Vitex capitata Willd., in
herb.

Literature: Vand., Fl. Lusit. 42--43, pl. 3, fig. 21. 1788;
Roem., Script. Hisp. 126, pl. 7, fig. 21. 1796; Vahl, Eclog.
Amer. 2: 50, pl. 18. 1798; H.B.K., Nov. Gen. & Sp. Pl. 2: 246.
1818; Steud., Nom. Bot., ed. 1, 888. 1821; Bull. Torrey Bot. Club
29: 597. 1902; Pittier, Contrib. U. S. Nat. Herb. 20: 487. 1922;
Moldenke, Alph. List Common Names 12 & 33. 1939; Moldenke, Lill-
oa 4: 325. 1939; Moldenke, Geogr. Distrib. Avicenn. 12, 20, 27,
& 40. 1939; Pittier, Supl. Plant. Usuel. Venez. 55. 1939; Molden-
ke, Prelim. Alph. List Invalid Names 30. 1940; Moldenke, Suppl.
List Common Names 1, 7, & 23. 1940; Moldenke, Phytologia 2: 31--
32. 1941; Moldenke, Alph. List Invalid Names 29. 1942; Moldenke,
Known Geogr. Distrib. Verbenac., [ed. 1], 30, 32, 75, & 102.
1942; Moldenke, Phytologia 2: 118. 1944; Moldenke, Alph. List In-
valid Names Suppl. 1: 18. 1947; Moldenke, Known Geogr. Distrib.
Verbenac., [ed. 2], 56, 57, 65, 94, 165, & 200. 1949; Romero
Castafieda, Caldasia 7 (31): 49. 1955.

Illustrations: Vand., Fl. Lusit. pl. 4, fig. 21. 1788; Roem.,
Script. Hisp. pl. 7, fig. 21. 1796; Vahl, Eclog. Amer. 2: pl.
18. 1798.

Shrub or small erect or spreading tree, 7--18 m. tall, with a
dense rounded crown; trunk 15--40 cm. in diameter, short, cylind-
ric, often without branches for 2/3 its height; wood hard,
heavy, taking polish well; bark medium-brown, deeply rimose;
branches contorted, compressed-terete, glabrous; branchlets
rather slender or stoutish, varying from gray to stramineous or

brownish, obtusely tetragonal or subterete, not very pithy, varying from hirtellous to very sparsely and minutely puberulent (especially toward the apex), soon becoming glabrous and nitidulous; twigs very slender, rather acutely tetragonal or compressed, short, densely puberulent when young, less so in age; nodes on older branchlets slightly ampilate and flattened, sometimes rather inconspicuously annulate on one side or not annulate; principal internodes 1--6 cm. long; leaf-scars mostly not very large nor corky nor prominent; leaves decussate-opposite or subopposite, 3- or 5-foliolate, dull-green; petioles very slender, convex or slightly keeled beneath, decidedly flattened above, 2--6.5 cm. long, not noticeably ampilate at the base nor disciform at the apex, rather sparsely puberulent or slightly hirtellous; leaflets subequal in size or the two lowermost (when there are 5) much smaller, all subsessile or the central one obscurely short-petiolulate, the petiolule 1--4 mm. long, slightly puberulent and margined; leaflet-blades thin-chartaceous or submembranous, dark-green and subnitid above, somewhat lighter beneath, the central one varying from oblong or elliptic to lanceolate or oblanceolate, 3.5--14.5 cm. long, 2--3.5 cm. wide, long-acuminate or caudate at the apex, entire, acute or acuminate at the base, glabrous and shiny on both surfaces or slightly and obscurely puberulent along the midrib and sometimes also along the larger veins; midrib slender, flat or slightly impressed above, prominulent beneath; secondaries slender, 7--18 per side, usually rather close together, ascending and rather straight, not much arcuate except at the margins where they are arcuately joined, flat or subprominent or more usually rather obscure above, prominulent beneath; vein and veinlet reticulation abundant, very fine, subprominent on both surfaces, often more so above than beneath; inflorescence cymose, axillary, capitate or subcapitiate (or rarely subumbelliform), long-pedunculate, 5--12 cm. long, 1--3.5 cm. wide, usually densely many-flowered, sometimes only few-flowered, often only few-fruited, sometimes with a few very short branches arranged in subumbelloid fashion; peduncles slender, compressed or terete, 4--9.5 cm. long, usually decidedly flattened, often sulcate, sparsely strigillose-puberulent or puberulent like the petioles, becoming less so in age; pedicels very slender, 1--2 mm. long or usually obsolete, puberulent or pubescent, to 6 mm. long in fruit; bracts none; bractlets none or, if present, linear and 1--3 mm. long; prophylla minute, setaceous, 1 mm. long or less, densely puberulent, obscured by the flowers in the dense heads; flowers elegant, handsome, nectariferous; calyx campanulate, 1--2 mm. long and wide, strigillose-puberulent or appressed-pilose, its rim subtruncate, often repand-denticulate or obsoletely 5-dentate; corolla hypocrateriform, varying from blue or pale-blue to blue-violet, lavender, or violet, 10--12 mm. long, densely puberulent outside, its tube cylindric, much longer than the calyx, its limb 2-lipped, the upper lip 2-lobed, the lower lip 3-lobed, the intermediate lobe largest, ovate, undulate along the margins, hirsute at the base inside; stamens purple, exserted, villous or glabrate; anthers dark-purple, ellip-

tic; pollen pale-yellow; style glabrous; fruiting-pedicels incrassate, often elongate to 6 mm.; fruiting-calyx enlarged and incrassate, shallowly cupuliform or patelliform, to 3 mm. long and 10 mm. wide, very lax, stramineous, very sparsely puberulent, its rim entire or scarious; fruit drupaceous, soft, fleshy, black, oblong, 12--14 mm. long, 8--9 mm. wide, edible.

The type of this species, deposited at the Botanisches Museum in Berlin, was collected by John Ryan [Herb. Willdenow 11712; Herb. Jussieu 5057; Macbride photos 39499] in 1796 on the island of Trinidad. The type of Vitex bignonoides was collected by Aimé Jacques Alexandre Bonpland (no. 741; Macbride photos 17558) in valleys near Villa de Cura, Aragua, Venezuela, while the type of V. wittrockiana was collected by João Geraldo Kuhlmann (no. 170; Herb. Rio de Janeiro 2915) on a campo at Caracarayah on the Rio Branco, Brazil, in February, 1913. The type specimen of Limia -- illustrated first by Vandelli in his "Florae Lusitanicae et Brasiliensis Specimen", page 42, plate 3, figure 21 (1788) and described also in Roemer's "Scriptores de Plantis Hispanicis, Lusitanicis, Brasiliensibus", page 126, plate 7, figure 21 (1796) and later re-named Vitex brasiliensis Juss. by Steudel in his "Nomenclator Botanicus", edition 1, volume 2, page 888 (1821) -- is said to be deposited in the Ecole Polytechnique de Lisbonne, Portugal. I have not as yet been able to see it. Vitex brasiliensis Mart. is a synonym of V. mexiae Moldenke.

Vitex capitata is an easily recognized species because of the characteristic long-acuminate or caudate leaflet-blades, yet it has been confused in herbaria with V. schomburgkiana Schau. and with members of the Bignoniaceae. The "Vitex capitata" described by Pittier in Contrib. U. S. Nat. Herb. 20: 487 (1922) is actually V. stahelii Moldenke. Schauer claims that V. bignonoides differs in having folded-reflexed leaves and larger flowers, but I fail to see any consistent or constant differences. Occasionally the cymes are umbelliform with few or many few-flowered branches 1--3 cm. long, as may be seen on Trin. Bot. Gard. Herb. 5499 at New York and on Williams & Freeman 11728 at Kew, both specimens being from Trinidad. Some collectors describe the flowers as "very pretty", while others call them inconspicuous. Williams describes the plant as a straggly tree, growing "on open rocks". Other collectors say it inhabits campos, savannas, woods, light forests, thickets, hillsides, roadsides, dry rocky slopes, and dry rocky places in general. It is said to be common in sandy soil. Purdie reports it as common in woods on Trinidad and "in the flowering season the ground is literally covered with its pretty violet-like flowers". He also states that it is an esteemed timber tree. It has been collected in anthesis from January to June, and in fruit in June and October. It has been found at altitudes of from 35 to 600 meters. Romero Castañeda says that it is not found above 600 meters altitude. Spruce says of his collection, made in June at Maypures, "it had just gone out of flower".

Common names are "aceituno", "bois de lizan", "escobillo",

"five-leaf fiddlewood", "guarataro", "piedrero", "totumillo", "white fiddlewood", and "white-fiddlewood".

The Dannouse collection cited below is past anthesis and with all its fruit already shed. It has much more thickly chartaceous leaflets, which are decidedly nigrescent in drying. Since all the other specimens cited were collected either during anthesis or in the fruiting stage, it is possible that this condition seen on the Dannouse specimen may be typical of the leaves late in the season. Romero Castañeda says that the species grows well in poor soil and would therefore be excellent for reforesting depleted land. Its nectariferous flowers, he notes, would make it of considerable interest to beekeepers.

Citations: TOBAGO: Williams & Freeman 11728, in part (K, K, K). TRINIDAD: D. A. Anderson s.n. (Bm, Bm, Cb); W. E. Broadway 5787 (Bm, Bm, Ca--416288, E--926005, K, K, N, S); Dannouse s.n. [March 1902] (N, R); Lockhart s.n. (K, K, K, N, N, P); Purdie 3 (K, K), s.n. (B); Ryan s.n. [1796; Herb. Willdenow 11712; Herb. Jussieu 5057; Macbride photos 39499] (Bm--isotype, Cp--isotype, Cp--isotype, F--1038377--photo of type, Kr--photo of type, N--photo of type, N--photo of isotype, P--isotype, Th--isotype, Z--photo of isotype); A. W. Thompson s.n. [Balmain, Conva; Trin. Bot. Gard. Herb. 8933] (R, R, R); Trin. Bot. Gard. Herb. 2420 (R), 3033 (B, R, W--1323349); Von Rohr s.n. (Em); West 20 (S); Williams & Freeman 11728, in part (N, Po--174818, R). COLOMBIA: Bolívar: Romero Castañeda 1636 (N). VENEZUELA: Amazonas: Spruce 3746 (K, N). Anzoátegui: Pittier 14884 (Ve). Apuré: Vélez 2688 (W--1564871). Aragua: Bonpland 741 [Macbride photos 17558] (B, F--663087--photo, Mi--photo, N--photo, N--photo, Z--photo); Ll. Williams 10188 (F--946457, F--946473, F--989696, Ve--12857). Bolívar: Cardona 2782 (N); Grossourdy Cat. 13 s.n. (P, P, P); Pittier 12849 (Kr, W--1800777); Ll. Williams 11642 (Ca--734895, F--998222, F--1002892, N, Ve--12853), 12046 (F--1006388, Ve--12854), 12696 (N, Ve--12852). Carabobo: Saer 868 (Ve--12856). Lara: Pittier 11756 (A, B, Cb, D--630277, K, Mu--4378, N, P, Ve--12855, W--1232661). Monagas: Aristeguieta 1729 (N); F. D. Smith 230 (Z); Steyermark 61777 (N). Zamora: Lasser 225 (Ca--734623, Ve--12850). CULTIVATED: Trinidad: W. E. Broadway s.n. [Trin. Bot. Gard. Herb. 1946] (R), s.n. [Trin. Bot. Gard. Herb. 5499] (N, R); J. H. Hart 1946 (B, B, K), s.n. [Trin. Bot. Gard. Herb. 5584] (B, R), s.n. [1889] (W--940065). LOCALITY OF COLLECTION UNDETERMINED: Herb. De Candolle 589 (Dc); Herb. Liebmann s.n. [West Indies] (Cp); Ryan s.n. [West Indies] (Cp, Cp, Cp).

VITEX CARBUNCULORUM Smith & Ramas, Rec. Bot. Surv. India 6: 31. 1914.

Literature: Smith & Ramas, Rec. Bot. Surv. India 6: 31. 1914; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 55 & 102 (1942) and [ed. 2], 129 & 200. 1949.

This species is said to be a tree 50--60 feet tall, with yel-

low flowers blooming in March. The original publication gives the type collection as Huk 153, from the same locality as the no. "53" cited below. It is possible that one or the other is an error in transcription and that both numbers represent the type collection. Huk 53 was originally determined as V. canescens Kurz.

Citations: BURMA: Upper Burma: Griffith 6067 (N, Ut--11517, V); Huk 53 (Bz--23808--isotype, N--photo of isotype, Z--photo of isotype).

VITEX CARVALHI Gürke in Engl., Pflanzenw. Ost-Afr. C: 339. 1895.

Literature: Engl., Pflanzenw. Ost-Afr. C: 339. 1895; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 326. 1900; Sim, For. Fl. & Res. Port. East Afr. 94. 1909; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"] : 44, 57, & 81. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 50, 51, & 102 (1942) and [ed. 2], 118, 120, & 200. 1949.

A shrub or tree; branchlets glabrous; leaves 5-foliolate; petioles very long; leaflets distinctly stalked, membranous, elliptic or lanceolate-obovate, 7.5--10 cm. long, acute or cuspidate at the apex, irregularly deeply toothed, glabrous on both surfaces; cymes lax, axillary, long-pedunculate; calyx campanulate, tomentose, its rim 5-toothed; corolla-tube pubescent.

Pieper cites the type collection, Carvalho s.n., from Mozambique, and Tiede 23 from Kenya. Sim also reports it from Portuguese East Africa.

VITEX CAULIFLORA Moldenke, Phytologia 3: 432. 1951.

Shrub, 4--5 m. tall; bark on stems apparently glabrous, light-gray; branches and branchlets not seen; leaves presumably 1-foliolate; petioles slender, 1.8--2.8 cm. long, glabrous; blades subcoriaceous, rather uniformly dark-green on both surfaces, very shiny beneath, elliptic, 8--14 cm. long, 3--5 cm. wide, acuminate at the apex, entire and somewhat revolute along the margins, acute or somewhat cuneate at the base, glabrous on both surfaces; midrib slender, impressed above, very prominent beneath; secondaries very slender, 7--10 per side, arcuate-ascending, flat or very slightly subimpressed above, sharply prominulous beneath, rather indistinctly arcuate-joined at the margins beneath; veinlet reticulation mostly obscure or indiscernible on both surfaces; inflorescence apparently cauliflorous, in small dense fascicles, sessile; pedicels very slender, about 5 mm. long, very densely strigose with sordid-brownish or grayish antrorse hairs; bractlets linear, 2--4 mm. long, densely strigose on one surface, glabrous on the other surface; calyx campanulate, herbaceous, 6--7 mm. long, about 5 mm. wide, densely strigose with sordid-yellowish or grayish antrorse hairs throughout, its rim deeply 5-lobed, the lobes triangular-ovate, attenuate-acuminate at the apex, 3--4 mm. long, equally strigose on the outside as the tube, their bases contiguous; corolla tubular, red or red-orange, 2--2.5 cm. long, incurved, glabrous at the base, rather densely

spreading-hirsute with ferruginous hairs above the tips of the calyx-teeth, gradually ampliate to 6 mm. at the apex, the lobes spreading, 3--4 mm. long; stamens and style exserted less than 1 cm. from the corolla-mouth.

The species is endemic to Madagascar and is known only from the original collection, made in woods at an altitude of 400 meters in the neighborhood of the Bay of Anlongol in August of 1912.

Citations: MADAGASCAR: Perrier de la Bathie 10311 (N--isotype, N--photo of type, P--isotype, P--type, Z--photo of type).

VITEX CAULIFLORA var. *LONGIFOLIA* Moldenke, *Phytologia* 3: 433. 1951.

This variety differs from the typical form of the species in having the leaf-blades 29--43 cm. long, 5--8 cm. wide, the petioles 4--5.5 cm. long, and the calyxes only lightly strigillose, less so on the lobes, the lobes separated by distinct sinuses at the base.

The variety is endemic to Madagascar and is known only from the original collection, made at Passimbé, in the northern part of the island, on December 27, 1881. A vernacular name is "ambonlayal".

Citations: MADAGASCAR: Humblot 90 (N--isotype, N--photo of type, P--type, Z--photo of type).

VITEX CAULIFLORA var. *VILLOSISSIMA* Moldenke, *Phytologia* 3: 433. 1951.

This variety differs from the typical form of the species in having its pedicels and calyxes during anthesis densely albidous-pubescent throughout, the calyx-teeth only 1.5--2 mm. long, and the corollas very densely albidous-villous. The leaves are not known and may well show other differentiating characters.

The variety is endemic to Madagascar and is known only from the original collection, made at Anony, in the northern forest of the country of the Sihanaka, on September 3, 1937.

Citations: MADAGASCAR: Herb. Jard. Bot. Tananarive 2949 (N--isotype, N--photo of type, P--type, Z--photo of type).

VITEX CESTROIDES J. G. Baker, *Journ. Linn. Soc. Lond.* 25: 341. 1890.

Literature: Baker, *Journ. Linn. Soc. Lond.* 25: 341. 1890; Pieper in Engl., *Bot. Jahrb. 62, Beibl. 141* ["142"]: 78 & 81. 1928; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 53 & 102 (1942) and [ed. 2], 123 & 200. 1949.

Erect shrub or tree; branchlets and twigs slender, light-gray, glabrous, obtusely tetragonal or subterete, sometimes terete; nodes not annulate; principal internodes 0.4--3 cm. long; leaves decussate-opposite, 1-foliolate; petioles slender, 5--10 mm. long, articulate at the apex, glabrous; blades thin-coriaceous, bright-green above, somewhat lighter beneath, narrow-elliptic or lanceolate, 3--10 cm. long, 0.9--2.7 cm. wide, acute or short-acuminate at the apex, entire and revolute along the margins,

attenuate-acute at the base, glabrous and very shiny on both surfaces; midrib slender, impressed above, prominent beneath; secondaries slender, 9 or 10 per side, short, divergent, indiscernible above, prominulous and arcuately joined in single loops 1 mm. from the margins beneath; veinlet reticulation indiscernible above, sub prominulous beneath; inflorescence axillary, few-flowered, cymose, the cymes so much abbreviated as to appear fasciculate and sessile, mostly 1--5-flowered, much shorter than the subtending leaves; peduncles abbreviated or almost obsolete, sometimes to 3 mm. long, appressed-pilose, the hairs antrorse; bractlets minute, linear-lanceolate or lanceolate, 2--3 mm. long, appressed-pilose; pedicels filiform, 9--10 mm. long, appressed-pilose or strigose; calyx campanulate or broadly infundibular, about 4 mm. long and 3 mm. wide, densely antrorsely strigose, the hairs drab and bristly, its rim 5-dentate, the teeth ovate-triangular or deltoid, acuminate-apiculate or cuspidate, erect; corolla not seen; fruiting-calyx enlarged, campanulate, about 6 mm. long and 8 mm. wide, 5-costate, antrorsely strigose, the teeth firmly erect, triangular-ovate, 2 mm. long; fruit drupaceous, oblong, about 8 mm. long and 4 mm. wide, glabrous, shiny.

The species is endemic to Madagascar and is known only from the original collection, made at East Androna before September, 1887.

Citations: MADAGASCAR: Baron 5608 (K--isotype, K--type, N--isotype, N--photo of type, P--isotype, Z--photo of type).

VITEX CHARIENSIS A. Chev., Etud. Fl. Afr. Cent. Franç. 1: 243, hyponym. 1913.

Literature: A. Chev., Etud. Fl. Afr. Cent. Franç. 1: 243. 1913; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 79. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 48 & 102 (1942) and [ed. 2], 114 & 200. 1949.

All that I know about this species is that it is supposed to be native to Ubangi-chari in French Equatorial Africa. Neither Chevalier nor Pieper has published a description of the plant, but the name is not strictly a nomen nudum (as Pieper states) because Chevalier states that it is based on his nos. 6841, 7158, 7219, 7465, 7527, and 7716 -- all apparently cotypes -- collected in the period between December, 1902, and March, 1903, at Dar-Banda, Ndelle, between Ndelle and M'Bra, at Bangoran Moyen, Dar-Rounga and Dialmada between Ndelle and Mamoun, growing on "rochers de gres" and at the edges of water.

VITEX CHARIENSIS var. **LATIFOLIA** A. Chev., Etud. Fl. Afr. Cent. Franç. 1: 243, hyponym. 1913.

Literature: A. Chev., Etud. Fl. Afr. Cent. Franç. 1: 243. 1913; Moldenke, Phytologia 4: 1953.

All that is known to me of this variety is that it is supposed to be endemic to Ubangi-chari in French Equatorial Africa. It is based on Chevalier's nos. 1413, 7178, 8997, 9054, and 9267 as cotypes. They were collected between January 21 and July 22, 1903, at Ndelle, eastern Dar-Banda, in Haut-Chari, and at the edge of

Lake Iro, Tour-Moural, in the country of the Saras-Ngake, and south of Baguirmi, Corbol, in Moyen-Chari.

VITEX CHRYSLERIANA Moldenke, Geogr. Distrib. Avicenn. 26, nom. nud. 1939; Trop. Woods 64: 31--32. 1940.

Literature: Moldenke, Geogr. Distrib. Avicenn. 26. 1939; Moldenke, Trop. Woods 64: 31--32. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39 & 103 (1942) and [ed. 2], 94 & 200. 1949.

Shrub or tree; branchlets quite stout and heavy, obtusely tetragonal, gray, minutely puberulent or glabrate, greatly thickened at the nodes with very large and greatly elevated corky leaf-scars; twigs very short, densely villous-pubescent with flavescent or rufescent hairs; nodes apparently not annulate; principal internodes greatly abbreviated, 2--25 mm. long; leaves decussate-opposite, 4- or 5-foliolate; petioles slender, subterete or slightly flattened above, not noticeably ampliate at the base, 3.5--4.8 cm. long, densely tomentose-pubescent or villous with flavescent hairs; leaflets unequal in size, the 3 central ones usually subequal, the 1 or 2 others much reduced, all sessile or subsessile; leaflet-blades thin-chartaceous, dark-green above, somewhat lighter beneath, the central one elliptic, 4--9.5 cm. long, 1.9--4.3 cm. wide, short-acuminate at the apex, entire, acute or short-acuminate at the base (rarely rounded), puberulent above, densely short-pubescent beneath, the lateral ones similar in all respects except size and always acute at the base; midrib slender, subimpressed above, prominent beneath; secondaries slender, 10--15 per side, arcuate-ascending, flat above, prominulenta and more densely pubescent beneath, rather obscurely joined near the margins; vein and veinlet reticulation rather abundant, mostly obscure or indiscernible above, subprominulenta beneath on mature leaflets, obscure on immature ones; inflorescence axillary, cymose, capitate or subcapitate, 3--4 cm. long, 1--3 cm. wide, rather densely many-flowered, sometimes bifurcate with two many-flowered cymes and a central terminal flower; peduncles very slender, 1.5--3 cm. long, densely short-pubescent or tomentose like the petioles, decidedly flattened; pedicels slender, 1 mm. long or less, densely short-pubescent; bracts none; bractlets and prophylla linear or setaceous, 1--2 mm. long, densely pubescent; calyx shallowly campanulate, about 2 mm. long and wide, very densely short-pubescent or tomentellous with more or less appressed flavescent hairs, its rim conspicuously 5-dentate, the teeth broadly ovate, triangular, acute; corolla hypocrateriform, its tube about 6 mm. long, gradually ampliate from the base to the broad apex, infundibular, densely appressed-pubescent on the outside with yellowish hairs, its limb decidedly 2-lipped, the 4 smaller lobes 2--3.5 mm. long, oblong-elliptic, rounded at the apex, the lower central one much enlarged, about 6 mm. long, undulate-crisped along the margins, rounded; stamens and style somewhat exserted; fruiting-calyx and fruit not seen.

The type of this little-known species was collected by Auguste François Marie Glaziou (no. 11320) at Itatiaia, Minas Gerais,

Brazil, according to Glaziou's own published notes, although the labels accompanying most of the herbarium specimens of this number read "Near Rio de Janeiro 1878-79".

Citations: BRAZIL: Minas Gerais: Glaziou 11320 (B--isotype, Cp--type, F--976910--isotype, K--isotype, N--isotype, N--photo of type, P--isotype, S--photo of type, Z--photo of type).

VITEX CHRYSOCARPA Planch. ex Benth. in Hook., Niger Fl. 486. 1849.

Synonymy: Vitex chrysocarpa Baker apud Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"] 68, in syn. 1928. Vitex zechii Gurke ex Pieper, l. c. Vitex chrysocarpa DC. ex Moldenke, Prelim. Alph. List Invalid Names 50, in syn. 1940.

Literature: Benth. in Hook., Niger Fl. 486. 1849; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 325. 1900; A. Chev., Expl. Bot. Afr. Occid. Franç. 1: 506. 1920; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"] 50, 68, & 81. 1928; Moldenke, Prelim. Alph. List Invalid Names 50. 1940; Moldenke, Alph. List Invalid Names 52. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 45-47 & 103. 1942; Moldenke, Phytologia 2: 118. 1944; Moldenke, Anal. Inst. Biol. Mex. 20: 15. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 109, 111-113, & 200. 1949.

A shrub or small tree to 8 m. tall; branchlets short-pubescent; leaves 3-5-foliolate; petioles 5-7.5 cm. long; leaflets subcoriaceous, obovate-cuneate, green and glabrous above when mature, densely drab-pubescent throughout beneath, entire or often crenate, obtuse at the apex, the central one short-stalked, 7.5-10 cm. long, 3-5 cm. wide; petioles pubescent; secondaries many, usually more than 12; cymes axillary, pedunculate, few-flowered, the branches villous; calyx campanulate, about 3 mm. long, densely villous, its teeth distinct, ovate; corolla light-blue, hairy, about 9 mm. long; fruit as large as a plum, hairy on the entire upper surface.

The species has been found in wooded savannas, at an altitude of 800 meters, fruiting in June. It has been misidentified as a Volkameria species. Chevalier, in the reference cited above, records it from the French Soudan.

The Barter 121, cited by Baker is actually V. pseudochrysocarpa Pieper. Baker also cites Scott-Elliott 5383 from French Guinea and Barter 388 and 1651 and Vogel 142 from Nigeria. Pieper likewise cites Vogel "1421" and adds Mellin 21, Zech 287/88, and Kersting 465 from Togoland.

Common names recorded for the species are "ayege", "ba-kudune", "balamagnian kan", "courou", "dipodii", "insuo-koto", "kellié naye", and "kuru".

Citations: SENEGAL: Leprieur s.n. [Senegal, 1830; Herb. Reichenbach f. 70999] (V). LIBERIA: G. P. Cooper 67 [Mus. Yale School Forest. 13717] (N). BELGIAN CONGO: Germain 874 (Br); Matagne 330 (Br, Br, N); Nullenders 582 (Br, N). NORTHERN RHODESIA: Milne-Redhead 436 (Br).

VITEX CHRYSOMALLUM Steud., Nom. Bot., ed. 2, 2: 777. 1840.

Synonymy: Chrysomallum madagascariense Petit-Thouars ex Steud., Nom. Bot., ed. 1, 1: 194, nom. nud. 1821. Vitex melleri J. G. Baker, Journ. Linn. Soc. Lond. Bot. 20: 227. 1883. Vitex coriacea Schlecht. ex Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 79, in syn. 1928 [not V. coriacea C. B. Clarke, 1885]. Vitex chrysomallum (Petit-Thouars) Steud. ex Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 53 & 103. 1942. Vitex aurata Hils. & Boj., in herb.

Literature: Petit-Thouars, Gen. Nov. Madagasc. 8. 1811; Poir. in Lam., Encycl. Bot. Suppl. 2: 257. 1811; Steud., Nom. Bot., ed. 1, 1: 194 (1821) and ed. 2, 2: 777. 1840; Schau. in A. DC., Prodr. 11: 694. 1847; J. G. Baker, Journ. Linn. Soc. Lond. Bot. 20: 227. 1883; Hochreutiner, Ann. Conserv. & Jard. Bot. Genev. 11--12: 93. 1908; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 79. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 53 & 103 (1942) and [ed. 2], 123 & 200. 1949.

Shrub or tree; branchlets stout, 3-angled, densely velutinous-pubescent with fulvous hairs, soon glabrescent, not twiggy; nodes not annulate; principal internodes 1--3 cm. long, often much more abbreviated; leaf-scars small, almost circular; leaves ternate, normally 5-foliolate (or 1--3-foliolate on shoots); petioles rather stoutish, 5--8.5 cm. long, densely puberulent with fulvous or brownish hairs, longitudinally striate, club-shaped at the apex; petiolules slender, 2--23 mm. long, the 3 central ones usually longer than the others; leaflet-blades thin-coriaceous, dark-green above, much lighter beneath, mostly nigrescent above, the lateral ones usually much smaller than the 3 upper ones, the central one oblanceolate, 4--12.5 cm. long, 1.5--3.7 cm. wide, rounded or usually emarginate at the apex, normally entire and revolute along the margins (sometimes coarsely dentate-lobed with 3 or 4 large rounded lobes on each side on shoots), cuneate-deltoid at the base, glabrous on both surfaces or very minutely and obscurely puberulous with scattered hairs beneath; midrib slender, mostly impressed above, very prominent beneath; secondaries very slender, mostly plane above, prominulous beneath, ascending, hardly arcuate, not plainly anastomosing; veinlet reticulation abundant, rather obscure to the naked eye but quite discernible under a hand-lens on both surfaces; inflorescence axillary, cymose, mostly shorter than the subtending petioles, 10--12-flowered; peduncles decidedly flattened, 1--1.5 cm. long, densely fulvous-puberulent with closely appressed hairs; cyme-branches much abbreviated, densely appressed-puberulent with fulvous hairs throughout; bractlets linear or setaceous, 1--3 mm. long, densely fulvous-puberulent on both surfaces; pedicels slender, 1--3 mm. long, densely fulvous-velutinous with short antrorse hairs; calyx campanulate, 4--5 mm. long and wide, densely appressed-pubescent with fulvous antrorse hairs, its rim truncate and entire; corolla yellow or pale orange-yellow, cylindric, slightly curvate at the apex, its tube about 3 mm. wide at the base and 5.5 mm. wide at the apex, about 2 cm. long, very densely velutinous-villous with golden or fulvous-brownish appressed antrorse hairs on the outside, the limb small, the lobes 2--3 mm.

long, almost completely hidden by the dense villous hairs on the outside; stamens exserted about 5 mm. from the corolla-mouth; pistil about the same length as the stamens; filaments and style glabrous; fruiting-calyx not much enlarged, campanulate, about 6 mm. long and wide, densely appressed-pubescent exactly as during anthesis, its rim shallowly 5-scalloped; fruit drupaceous, sub-globose, about 6 mm. long and 5 mm. wide, glabrous, very shiny.

The type of this species was collected by Aubert du Petit-Thouars in Madagascar and is deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris. The "Chrysomallum madagascariense Petit-Thouars" cited in Engler, Bot. Jahrb. 62, Beibl. 141 ["142"]: 79 (1928) as having been published in Petit-Thouars, Gen. Nov. Madagasc. 8 (1811) and in Lam., Encycl. Bot. Suppl. 2: 257 (1811) does NOT occur in either place! Only the genus Chrysomallum is described in these two references. The binomial seems to start as a nomen nudum in Steud., Nom. Bot., ed. 1, 1: 194 (1821).

The type of Vitex melleri is Meller 69, collected on August 26, 1862, in sandy soil at Andovorant, between Tamatave and Antanarivo, Madagascar, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The type of V. aurata is Bojer s.n. from Taka-souha, province of Be-tani-mena, also deposited at Kew.

As Pieper has pointed out, V. melleri is said to differ from V. chrysomallum only in having its leaflets stalked, rather than sessile. However, the length of the petiolules in this species varies greatly and cannot be used as a specific criterion in this case. The type specimen of V. melleri, in fact, already bears the notation "V. chrysomallum Steud." in an old hand, and Baker in his original description admits that it is "a very near ally of V. chrysomallum, Steud."

The species occurs in litoral forests, and has been collected in flower in March, April, May, and August, and in fruit in March.

Citations: MADAGASCAR: Baron 2206 (K); Bojer s.n. [Takasouha, prov. Be-tani-mena] (K); Chaperier s.n. (P, P, P); Decary 6416 (N, P), 6506 (P), 6510 (P), 17698 (P), 17708 (P); Guillot 78 (P); Herb. Petit-Thouars s.n. (N--isotype, N--photo of type, P--type, P--isotype, Z--photo of type); Herb. Richard s.n. (P); Humboldt 25 (K, P), s.n. [Foule Pointe] (P); Meller 69 (K, N--photo, Z--photo); Perrier de la Bathie 10243 (P), 13315 (P); Ursch 48 (P).

VITEX CHRYSOMALLUM var. LONGICALYX Moldenke, Phytologia 3: 431. 1951.

This variety differs from the typical form of the species in having its calyx during anthesis about 7 mm. long, densely villous, and the central leaflets to 10 cm. in length. The corolla is to 24 mm. long, 2.5 mm. wide at the base, and 8 mm. wide at the apex.

The type of the variety was collected by Baron Pierre Eugène Perrier de la Bathie (no. 10224) at an altitude of about 500 meters in the Massif de Manongarivo in May, 1909, and is deposit-

ed in the herbarium of the Muséum National d'Histoire Naturelle at Paris. It is thus far known only from the original collection.

Citations: MADAGASCAR: Perrier de la Bâthie 10224 (N--isotype, N--photo of type, P--type, Z--photo of type).

VITEX CHRYSOMALLUM var. **TOMENTELLA** Moldenke, Phytologia 3: 431--432. 1951.

This variety differs from the typical form of the species in having the lower leaflet-surfaces densely golden-tomentellous with appressed tomentum. The calyx is 4--5 mm. long, its rim almost always truncate with 5 very minute punctiform teeth (sometimes larger in abnormal flowers), glabrous on the inside, tomentose on the outside with very fine and dense villoosity; corolla 2 cm. long, its tube glabrous on the inside, long velutinous-hirsute on the outside except for the lowest portion covered by the calyx, the lip narrowly oval, 4-lobed, 5-toothed; stamens 4, inserted near the base of the corolla-tube; filaments long-pilose on their included portion, glabrous on the exserted part; style glabrous, bifid; a partial disk seems to be present above the ovary; ovary 4-celled, the cells 1-ovulate; ovules anatropous.

The type of the variety was collected by M. Thouvenot (no. 150) at Analamazaotra, Madagascar, in 1919, and is deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris. The variety is known thus far only from the type locality.

Citations: MADAGASCAR: Perrier de la Bâthie 60 (P); Thouvenot 150 (K--isotype, N--isotype, N--photo of type, P--type, Z--photo of type).

VITEX CILIATA Pierre ex Pellegrin, Bull. Mus. Hist. Nat. Paris 33: 268. 1927.

Synonymy: Vitex ciliata (Pierre) Pellegrin, Mém. Soc. Linn. Normand., sér. nouv., Bot. 1 (3): 49--50, pl. 2. 1928. Vitex ciliata Pellegrin, Bull. Soc. Bot. France 84: 644. 1937.

Literature: Pellegrin, Bull. Mus. Hist. Nat. Paris 33: 268. 1927; Pellegrin, Mém. Soc. Linn. Normand., sér. nouv., Bot. 1 (3): 49--50, pl. 2. 1928; Hill, Ind. Kew. Suppl. 8: 249. 1933; Pellegrin, Bull. Soc. Bot. France 84: 644. 1937; Moldenke, Alph. List Invalid Names 53. 1942; Moldenke, Known Geogr. Distrib. Verbenac. [ed. 1], 48 & 103 (1942) and [ed. 2], 114 & 200. 1949.

Illustration: Pellegrin, Mém. Soc. Linn. Normand., sér. nouv., Bot. 1 (3): pl. 2. 1928.

The type collection is from Mayombe, Middle Congo, in French Equatorial Africa.

Citations: FRENCH EQUATORIAL AFRICA: Gabun: Le Testu 1701 (F--photo, N, N--photo, S, Sg--photo, Z--photo).

VITEX CILIO-FOLIOLATA A. Chev., Expl. Bot. Afr. Occ. Franç. 1: 506, nom. nud. 1920.

Literature: A. Chev., Expl. Bot. Afr. Occ. Franç. 1: 506. 1920; Hill, Ind. Kew. Suppl. 6: 219. 1926; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 46 & 103 (1942) and [ed. 2], 112 &

200. 1949.

The species appears to be endemic to the Ivory Coast

VITEX CLEMENTIS Britton & P. Wils., Mem. Torrey Bot. Club 16: 98.
1920.

Literature: Britton & Wils., Mem. Torrey Bot. Club 16: 98.
1920; Moldenke, Geogr. Distrib. Avicenn. 6. 1939; Moldenke, Known
Geogr. Distrib. Verbenac., [ed. 1], 25 & 103 (1942) and [ed. 2],
45 & 200. 1949.

Small tree, to 4 m. tall; branchlets slender, gray, obtusely tetragonal, very shortly or obscurely puberulent (more densely so at the nodes), becoming subglabrate, not noticeably flattened nor ampliate at the nodes, but with greatly elevated leaf-scars; twigs slender, flattened-tetragonal, densely short-pubescent or tomentulose with ochraceous hairs; nodes not noticeably annulate; principal internodes abbreviated, 5--25 mm. long; leaves decussate-opposite, 3--5-foliolate; petioles slender, 1.5--7 cm. long, very densely short-pubescent or tomentulose like the twigs with ochraceous or flavescent hairs, flattened above, not noticeably ampliate at the base; leaflets (when 3) subequal in size or (when 5) the lowest pair much reduced, all petiolulate, the petiolules varying from 1 to 17 mm. in length (not 2 cm. as stated by Britton & Wilson), the central ones often longer than the lateral ones, the larger ones decidedly margined and deeply canaliculate; leaflet-blades membranous, dark-green or grayish-green above, much lighter beneath, the central one oblong-elliptic or occasionally elliptic-subobovate, 3.5--14 cm. long, 1.6--4.5 cm. wide, obtuse or acute at the apex, entire, obtuse or narrowed at the base, puberulent or glabrate above (except on the impressed veins), densely tomentulose beneath with ochraceous hairs, the lateral ones similar in all respects except size; midrib slender, impressed above, prominent beneath; secondaries slender, numerous, close together, 10--15 per side, ascending, rather straight, rather obscurely arcuate-joined at the margins beneath, slightly impressed above, prominent beneath; vein and veinlet reticulation sparse, obscure or indiscernible on both surfaces; inflorescence axillary, cymose, several or numerous on the youngest twigs, 2--3.5 cm. long, 1--2 cm. wide, many-flowered, subcapitate or umbelliform (not paniculate as stated by Britton & Wilson); peduncles very slender, 1.5--2.4 cm. long, flattened, densely puberulent or short-pubescent with ochraceous or flavescent hairs; pedicels slender, 1--5 mm. long, densely short-pubescent; bracts none; bractlets linear, 2--6 mm. long, densely pubescent; prophylla minute, setaceous, densely flavescent-pubescent; calyx short-campanulate, about 6 mm. wide, its lobes suborbicular, ciliate; corolla purple, 1.5--1.7 cm. wide, villous on the outside, its tube about 6 mm. long, its lobes very unequal; fruiting-calyx patelliform or reflexed, about 7 mm. wide, densely puberulent outside, glabrous and nitid within, its margin shallowly lobed or subentire; fruit fleshy, oblong, about 15 mm. long and 13 mm. wide (when dry), glabrous.

The type of this species was collected by Augustin Clément

Téteau [Brother Clément] (no. 168) in coastal thickets at Santiago de Cuba, Oriente, Cuba, in 1919, and is deposited in the Britton Herbarium at the New York Botanical Garden. Britton & Wilson describe the pubescence as tomentulose throughout the cymes and the cymes as "panicled" and "few—several-flowered". The Sauvalle specimen from Cabo Cruz, which they cite, is actually the closely related *V. tomentulosa* Moldenke. The species has been collected in flower in April and in fruit during June.

Citations: CUBA: Oriente: Clément 168 (Ha--isotype, N--type), 6016 (N, N), 6520 (N), s.n. [León 15584] (Ha, N); León 9769 (B, Ha, N).

VITEX COCHINCHINENSIS Dop, Bull. Soc. Hist. Nat. Toulouse 57: 199. 1928.

Literature: Dop, Bull. Soc. Hist. Nat. Toulouse 57: 199. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 59 & 103 (1942) and [ed. 2], 137 & 200. 1949.

The species is based on the following specimens as cotypes: Baudouin s.n., Lecomte & Finet 1867 and 1962, Lefèvre 233, Talmy 259, and Thorel 1114. It has been misidentified in herbaria as *V. pubescens* Vahl.

Citations: INDOCHINA: Cochinchina: Pierre 648 (Bz--73122, N, N--photo, S, Z--photo).

VITEX COFASSUS Reinw. ex Blume, Bijdr. 8: 3. 1826.

Synonymy: *Cofassus* Rumph., Herb. Amboin. 3: 28, pl. 14. 1743. *Vitex punctata* Schau. in A. DC., Prodr. 11: 687. 1847. *Vitex monophylla* K. Schum. & Hollr., Fl. Kais. Wilhelmsl. 121. 1889. *Vitex cofassus* var. *typica* H. J. Lam, Verbenac. Malay. Arch. 173. 1919. *Vitex cofassus* Reinw. & Blume, in herb. *Vitex punctata* Vahl, in herb.

Literature: Rumph., Herb. Amboin. 3: 28, pl. 14. 1743; Blume, Bijdr. 8: 3. 1826; Schau. in A. DC., Prodr. 11: 687. 1847; Miq., Fl. Ind. Bat. 2: 863. 1856; K. Schum. & Hollr., Fl. Kais. Wilhelmsl. 121. 1889; K. Schum. & Lauterb., Fl. Deutsch. Südsee 524. 1900; Pulle in Lorentz, Nova-Guinea 3 (4): 685. 1910; Merr., Philip. Journ. Sci. Bot. 11: 310. 1916; Heyne, Nutt. Plant. Nederl. Ind. 4: 112. 1917; H. Hallier, Med. Rijks Herb. Leid. 37: 47. 1918; H. J. Lam, Verbenac. Malay. Arch. 172--173. 1919; H. J. Lam, Bull. Jard. Bot. Buitenz., ser. 3, 5 (2): 178. 1922; Heyne, Nutt. Plant. Nederl. Ind. 1315--1316. 1925; H. J. Lam in Engl., Bot. Jahrb. 59: 92. 1925; Moldenke, Geogr. Distrib. Avicenn. 40. 1939; Moldenke, Suppl. List Common Names 3, 4, 8, 11, 17, & 24. 1940; Moldenke, Prelim. Alph. List Invalid Names 23, 50, 51, & 52. 1940; Kanehira & Hatusima, Bot. Mag. Tokyo 56: 115. 1942; Moldenke, Alph. List Invalid Names 21, 52, 54, & 55. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 63, 66--68, 75, & 103. 1942; Moldenke, Phytologia 2: 113. 1944; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 142, 143, 147--150, 165, & 200. 1949.

Large or medium-sized tree, to 40 m. tall, the butt or bole 20--26 m. in circumference, deeply fluted or grooved, often flanged with medium-sized buttresses, crooked; bark varying from dark-brown or pale-brown to brown-gray, rough, very fibrous or scaly, peeling in long thin flakes or slightly furrowed or fissured, the inner bark dark-stramineous or white, about 1/4 inch thick, with conspicuous rings of fibers; wood heavy, yellow to black in the center, the sapwood yellow, not clearly defined, the heartwood dark-brown, sharply defined; crown light-green, sparse, spreading; branches numerous; branchlets and twigs stout, obtusely or acutely tetragonal, sometimes slightly sulcate on the sides, very medullose, light-gray or (at the tips) brownish in drying, lenticellate, sparsely and obscurely puberulent or glabrate; nodes often slightly annulate; principal internodes 1--4.3 cm. long; leaves decussate-opposite, stiff, 1-foliolate, light-green, turning yellow when old, shiny above, paler or glaucous beneath; petioles rather stoutish, 2--5 cm. long, convex beneath, flattened and obscurely margined above, nigrescent in drying, sparsely and obscurely puberulent, becoming glabrate, not much ampliate at the base, jointed at the apex; petiolules similar to the petiole in all respects but only 1--3 mm. long and plainly margined; leaflet-blades chartaceous, dark-green and shiny above, lighter beneath, elliptic, 9.5--20 cm. long, 5--9 cm. wide, acuminate (or rarely obtuse on stunted leaves) at the apex, entire, acute at the base and prolonged into the petiolule, glabrous on both surfaces; midrib rather stout, flat above, prominent and often keeled beneath; secondaries slender, 10--17 per side, ascending, slightly arcuate, rather obscurely joined at the margins beneath, prominulous above, prominent beneath; vein and veinlet reticulation fine, abundant, prominulous above, usually only the larger portions prominulous beneath; inflorescence terminal and axillary in the uppermost axils, paniculate, 14--17 cm. long, 3--11 cm. wide, loosely many-flowered, each panicle simple or branched and composed of many, small, more or less irregularly placed, few-flowered, stalked cymes; peduncles (4--6 cm. long) and rachis rather stout, sharply tetragonal, lenticellate, purple-green when fresh, usually brownish in drying, similar to the branchlets in puberulence and texture; sympodia usually few, often elongate, flattened; pedicels slender, to 1 mm. long or obsolete, in fruit incrassate and to 2 mm. long, puberulent; bracts often present, large and foliaceous, similar to the leaflets in all respects but smaller; bractlets and prophylla small, linear, puberulent; buds green, short-pubescent; calyx cupuliform, 2--2.5 mm. long, 2.5--3 mm. wide, with 2 small linear prophylla at its base, sparsely pubescent and glandular on the outer surface, glabrous or slightly pilose within, its rim truncate or with 2--5 very small teeth; corolla varying from blue, blue-violet, bluish-purple, or pale-purple to purple, lilac, or lavender, sometimes pale-mauve with darker markings, purplish with shades of pale-violet, or pale-blue inside and reddish, whitish, or white on the outside, 2-lipped, 5-lobed, the tube pubescent and glandular on the outer surface (except on the lower part), glabrous inside except for

the villous throat, 3—4 mm. long, the 4 smaller lobes ovate, 1—1.5 mm. long, papillose on the inner surface, pubescent and glandular on the outer surface, the 5th lobe 2—2.5 mm. long, villous on the inner surface, sometimes the tube blue and the lip deep-blue; stamens little exserted; filaments stout, inserted in the corolla-throat; anthers reniform, dark-violet, with divergent thecae; style about 6 mm. long, about as long as the corolla; stigma shortly bifid; ovary depressed, glabrous, sparsely glandular; fruiting-calyx enlarged, patelliform, about 5 mm. wide, obscurely and sparsely strigillose or glabrate outside, glabrous and shiny on the inner surface, venose, its rim irregularly scarious or lobed; fruit succulent when fresh, hard and dry when old, obovate, varying from dark-violet to purple-black or black when ripe, 5—8 mm. long, 5—9 mm. wide, densely appressed-puberulent or glabrous, mucronulate, conspicuously striate and venose, seated on or half-enclosed by the slightly enlarged fruiting-calyx.

The species is native to the eastern Malay Archipelago and western Polynesia. Brass records it from Mawa Island in the Solomon group. It is found in the second story of coastal forests, near streams and coconut plantations, in lowland or littoral rainforests and in high rainforests. It is said to be common in the lower mountain rainforests and has been collected at altitudes from sea-level to 2070 meters, blooming from January to May and in September, November, and December, fruiting in January, February, May, July, August, September, and December. Its exceptionally strong and durable wood is used in the Moluccas and Solomons for making all the natives' large wooden bowls and platters used during feasts, in which food is pounded in a manner similar to mortar, and is employed as drum-logs for making native drums. Dr. Lam in Engl., Bot. Jahrb. 59: 92 (1925) and in Bull. Jard. Bot. Buitenz., ser. 3, 5 (2): 178 (1922) gives the original publication as page "813" instead of volume 3, page 3. The same error is made in Med. Rijks Herb. Leid. 37: 47 (1918) by Hallier. The specific name is often upper-cased, as it is a vernacular name, but fortunately the International Rules of Botanic Nomenclature now permit us to abandon this silly custom. The species has been confused with species of Clerodendrum in the past, due, probably, to its 1-foliolate leaves resembling simple ones.

Vernacular names recorded for the species are as follows:

"alawa", "bana", "banafat", "bana tamina", "banohoeba", "bars", "beokl", "bèso", "bete", "biti", "boelaso", "boepasa", "bolat", "clasa", "cofassa", "cofassus", "fa-fa", "fa-fa wola", "faffa", "father", "gawasa", "gofasa", "gofasa batoe", "gofasa besi", "gofasa gaba", "gofasa gaba-gaba", "gofasa merah", "gofasa-pantai kasala", "gofasa pérampoean", "gofasa tikar", "gofassa", "goefasa", "goefasa koening", "govasa", "govasa gabba gabba", "katonde", "katondeng", "katondeng", "katonding", "koela", "matatakum", "moi-dewie", "nanasa", "narása", "olas", "pasal", "tasia", "tompira", "vasa", "vasari", "waelasi", "wila", "wola", "wolalie tondoe", "wolas", "wolata batoe", and "wolata poetito".

The so-called Vitex cofassus var. pubescens Hall. f. and V.

cofassus var. timorensis Hall. f. are synonyms of V. parviflora A. L. Juss., while V. punctata Merr. is Teijsmanniiodendron holl-rungii (Warb.) Kosterm. The Toxopeus 52 cited by Lam is f. anomala Moldenke. The type of Vitex monophylla is said to be Hollrung 505, but labels on the actual specimens have this number struck out and "504" substituted in an unknown hand.

Schumann & Lauterbach's book, Fl. Deutsch. Südsee, cited above, has the date "1901" on its title-page, but was actually issued in 1900, as is indicated by the fact that the copy in the New York Botanical Garden library was received on December 9, 1900, according to a note inscribed on its title-page.

Dr. Lam cites the following collections not as yet seen by me: Herb. Lugd.-Bat. 908267-273 and 908353-297 from Ternate; DeVriesse & Teijsmann s.n. from Ceram; Reinwardt 1465 from Saparua; Elbert 2732 from Buton; Herb. A. R. T. 11523 from Halmahera; Gjellerup 35a and 406a--c and Wiesenthal 44 from Dutch New Guinea; Schlechter 13832, 13932, 14566, and 16042, Nyman 83 and 817, Ramu Exped. 136, and Ledermann 7261 and 10723a from Northeastern New Guinea; Peekel 310 from New Ireland; Kraemer s.n. from the Pelew Islands; Raymundus 98 and K. Gibbon 1213 (1113) from Koror; Kersting 1213 from the Marianna or Caroline Islands; and Kensen 283 from Key Island. Kanehira & Hatusima cite their no. 11745.

Citations: CAROLINE ISLANDS: Pelew Islands: Kanehira 1977 (N). JAVA: Backer 31637 (Bz--23866, Bz--23867, Bz--23868, Bz--23869, N), s.n. [18/12/19] (Bz--23870, N), s.n. [Buitenzorg, 1919] (Bz--23871, Bz--23872). CELEBES: Bish 251 [Boschbouwproefst. BB.21984] (Bz--23937); Bunnemeyer 10640 (Bz--23930), 10773 (Bz--23929, Bz--23932, Ut--30741); Burghardt 9 [Boschbouwproefst. BB.3578] (Bz--23912), 10 [Boschbouwproefst. BB.8579] (Bz--23913, Bz--23914, Bz--23915, Bz--23916), 47 [Boschbouwproefst. BB.4989] (Bz--23954); Goot 5 (Bz--23941); Heyne 2821 (Bz--24017, Bz--24020), s.n. (Bz--24019); Kjellberg 294 (Bz--23953, S); Laleno 18 [Boschbouwproefst. BB.18017] (Bz--23939), 24 [Boschbouwproefst. BB.18023] (Bz--23940), 46 [Boschbouwproefst. BB.19441] (Bz--23935); Lam B.1 (Bz--24015, Bz--24016); Moningka 6 [Boschbouwproefst. BB.31521] (Bz--23910); Noerkas 65 (Bz--24023, Bz--24024, Bz--24025), 69 (Bz--24018); Politon 6 [Boschbouwproefst. BB.31485] (Bz--23911), 66 [Boschbouwproefst. BB.31391] (Bz--23946), 94 [Boschbouwproefst. BB.32490] (Bz--23942); Rachmat 168 (Bz--24021, Bz--24022, Bz--24032), 338 (Bz--24028, Bz--24029); Reppie 52 [Boschbouwproefst. Cel./V.306] (Bz--23926), 193 [Boschbouwproefst. Cel./IV.182] (Bz--23922), 347 [Boschbouwproefst. BB.25004] (Bz--23936), 518 [Boschbouwproefst. Cel./V.303] (Bz--23919), 519 [Boschbouwproefst. Cel./V.304] (Bz--23920), 520 [Boschbouwproefst. Cel./V.305] (Bz--23921), E.219 [Boschbouwproefst. BB.23268] (Bz--23925), E.221 [Boschbouwproefst. BB.23270] (Bz--23923), E.222 [Boschbouw-

proefst. BB.23271] (Bz--23917), E.307 [Boschbouwproefst. BB.23267] (Bz--23924), E.315 [Boschbouwproefst. BB.26284] (Bz--23944); Roringpandsy 13 [Boschbouwproefst. BB.7502] (Bz--23933); Teijssmann 12879 (Bz--24026, Bz--24027, Bz--24030); Tobing E.281 [Boschbouwproefst. BB.24495] (Bz--23943); Van Steenis 10259 (Bz--23938); Walongitang 24 [Boschbouwproefst. BB.13745] (Bz--23934); Waturandang 16 [Boschbouwproefst. Cel./V.134] (Bz--23927), 24 [Boschbouwproefst. Cel./IV.100] (Bz--23918), 298 [Boschbouwproefst. Cel./V.134] (Bz--23928); Yamet 4 [Boschbouwproefst. BB.31834] (Bz--23945). MOENA ISLAND: Boschbouwproefst. BB.4989 (N, Ut--80725); Waturandang 97 [Boschbouwproefst. BB.21342] (Bz--21342), 102 [Boschbouwproefst. BB.21347] (Bz--23951), 291 [Boschbouwproefst. BB.23297] (Bz--23948), 292 [Boschbouwproefst. BB.23298] (Bz--23949), 301 [Boschbouwproefst. BB.23307] (Bz--23947), I.9 [Boschbouwproefst. BB.2-755] (Bz--23950). LESSER SUNDA ISLANDS: Buton: Bevershuis 2 (Bz--23955); DeBoer 16 [Boschbouwproefst. BB.2239] (Bz--24031). MOLUCCA ISLANDS: Amboina: Bell 21 [Boschbouwproefst. BB.10415] (Bz--23873, Bz--23874, N, N); Binnendyk s.n. [Ambo] (Bz--23988); Boerlage 503 (Bz--23989, Bz--23990, Bz--23991, N, Ut--58727); Boesveld s.n. [Sept. 1927] (Bz--23876); Hallalu 4 [Boschbouwproefst. BB.19510] (Bz--23875); Huka 1 [Boschbouwproefst. BB.17622] (Bz--23879); C. B. Robinson 302 (Bz--23987); Teijssmann s.n. [Soja] (Bz--23992, Bz--23993). Buru: Sauuis 52 (Bz--23881); Teijssmann 16755 (Bz--24000, Bz--24001). Ceram: Bell 11 [Boschbouwproefst. BB.13416] (Bz--23878); Burg 9 [Boschbouwproefst. BB.23041] (Bz--23885); Heyne s.n. (Bz--23997, Bz--23998, Bz--23999); Kornassi 451 (Bz--23884, Ut--80714), 1039 (Bz--23886, Bz--23887, N, Ut--80715); Rutten 1736 (Bz--23882, Bz--23883), s.n. [1917--1919] (Bz--23877, Bz--23880); Suchse s.n. (Bz--23994, Bz--23995, Bz--23996); Watangitang 1 [Boschbouwproefst. BB.4128] (Bz--23931). Halmahera: Anang 668 (Bz--72939); Beguin s.n. (Bz--23900); Haan 211 [Boschvouwproefst. BB.23740] (Bz--23905), 269 [Boschbouwproefst. BB.23771] (Bz--23901), 270 [Boschbouwproefst. BB.23772] (Bz--23904), 271 [Boschbouwproefst. BB.23773] (Bz--23902, Bz--23903), 438 [Boschbouwproefst. BB.24836] (Bz--23899); Teijssmann 5545 (Bz--24011, N, Ut--11523). Manole: Asada & Anta s.n. [Boschbouwproefst. BB.29766] (Bz--23893); Atje s.n. [Hulstijn 414] (Bz--24002, Bz--24006). Morotai: Haan 365 [Boschbouwproefst. BB.24553] (Bz--23898); Kostermans & Tangkilisan 19 [Boschbouwproefst. BB.33731] (Bz--72880); Main & Aden 368 (Bz--72888), 926 (Bz--72889), 1472 (Bz--72737), 1516 (Bz--72735, Bz--72736); Tangkilisan 239 [Boschbouwproefst. BB.33909] (Bz--72595). Sanana: Bloembergen 265 [Boschbouwproefst. BB.28769] (Bz--23892), 405 [Boschbouwproefst. BB.29816] (Bz--23896, Bz--23897), 4369 (Bz--23894, Bz--23895). Soelabesi: Hulstijn 337 (Bz--24007, Bz--24008, Bz--24009). Sula: Atke s.n.

[Hulstijn 8] (Bz--24005), s.n. [Hulstijn 404] (Bz--24003, Bz--24004). Ternate: Haan 65 [Boschbouwproefst. BB.23185] (Bz--23890, N), 333 [Boschbouwproefst. BB.23829] (Bz--23891, N); Heyne 1 (Bz--24010). NEW GUINEA: Dutch New Guinea: Pleyte 414 (Bz--72890, Bz--72891), 1033 (Bz--72694, Bz--72695). Northeastern New Guinea: Clemens 119 (Br); Fryar 3347 (Bz--72684), 4000 (Bz--72686); E. Gray 3313 (Bz--72683); Herb. Dept. Forests 4052 (Bz--72687); Hollrung 504 (Bz--24014, N--photo, Z--photo); Weinland 155 (Bz--24012, Bz--24013); Wormsley 2913 (Bz--72632), 3897 (Bz--72635). AROE ISLANDS: Kobroor: Buwalda 5006 (Bz--72734). Manoenbai: H. Jensen 283 (Bz--23909). Trangan: Buwalda 5435 (Bz--72596). Island undetermined: Buwalda 263 [Boschbouwproefst. BB.25296] (Bz--23908), 373 [Boschbouwproefst. BB.25407] (Bz--23906), 438 [Boschbouwproefst. BB.25472] (Bz--23907). SOLOMON ISLANDS: Bougainville: Kajewski 1533 (Bz--23956, Bz--23964), 1843 (Bz--23960, Bz--23963). Guadalcanal: Kajewski 2387 (Bz--23967, Bz--23970), 2439 (Bz--23958, Bz--23962), 2605 (Bz--23961, Bz--23973, N). Malaita: Kajewski 2381 (Bz--23968, Bz--23971, S). San Cristobal: Brass 2821 (Bz--23959, Bz--23966). Ysabel: Brass 3154 (Bz--23957, Bz--23965), 3272 (Bz--23969, Bz--23972). CULTIVATED: India: Bourne & Bourne 2328 (K, N, N--photo, Z--photo). Java: Herb. Hort. Bot. Bogor. XI.B.XIX.114 (Bz--25811, Bz--26584), XI.I.29a (Bz--25830, Bz--25831, Bz--26578, Bz, Bz, Bz, N), XI.I.34 (Bz--25837, N), XI.J.9 (Bz--25833, Bz, N), XI.K.15 (Bz--25864, Bz--26579, Bz, Bz, Bz, N), XI.K.15a (Bz--25865, N), XI.K.17 (Bz--25866, Bz--25867, Bz--26580, Bz, N), XI.K.17a (Bz, Bz, Bz, Bz, N), XII.B.V.20 (Bz--26241, Bz--26583, Bz, Bz, N), XII.E.VI.20 (Bz--23976, Bz--23977), XII.B.VII.14 (Bz--26247, Bz--26248, N), XII.B.VII.20 (Bz--26249, Bz--26583, Bz, N), XII.B.VIII.14 (Bz--26581), XIII.J.87 (Bz--26253, Bz--26254, Bz, Bz, Bz, Bz, N, Oa, Oa), s.n. (Bz--23973, Bz--23979, Bz--23930, Bz--23981, Bz--23982, Bz--23984, Bz--23935, Bz--23986, Bz--24033); Herb. Sibolangit 58 (Bz--26513, N); Teijsmann s.n. [Herb. Hort. Bot. Bogor. 1860] (Le, Le, N, N, N--photo, Z--photo).

VITEX COFASSUS f. ANOMALA Moldenke, Phytologia 3: 488. 1951.

Literature: Moldenke, Phytologia 3: 486--488. 1951.

This form differs from the typical form of the species in having many of its leaves 2- or 3-foliolate, 2- or 3-parted, or 2- or 3-lobed even at maturity on flowering specimens.

The type of the form is Boschbouwproefstation BB.8579, collected at Tanaberoe, at an altitude of about 5 meters, Boeloekemba, Celebes, on January 12, 1935, and is deposited in the herbarium of the Botanisch Museum at Utrecht. The Herb. Hort. Bogor. XI.K.22, cited below, was originally identified as V. altissima L.f., which, indeed, it may prove to be, for its leaves are mostly equally 3-foliolate, the lower ones 2-foliolate and the lowest 1-foliolate, but Dr. Lam has annotated it as V. cofassus.

var. typica. He also cites the Toxopeus 52, cited below, as var. typica, noting the anomalous leaf condition. Common names recorded for this form are "basa" and "goefasa batoe".

Citations: CELEBES: Boschbouwproefst. BB.8579 (N--photo of type, Ut--81999--type, Z--photo of type). MOLUCCA ISLANDS: Buru: Oersipuny 91 [Boschbouwproefst. BB.22783] (Bz--23889); Toxopeus 52 (Bz--23888). Tanimber Islands: Buwalda 4030 (Bz--72598). CULTIVATED: Java: Herb. Hort. Bot. Bogor. XI.I.29 (Bz--25832, Bz--26535, Bz--26586, Bz, N), XI.K.22 (Bz--25869), s.n. (Bz--23983).

VITEX COFASSUS var. PUBERULA H. J. Lam, Verb. Malay. Arch. 174. 1919.

Literature: H. J. Lam, Verb. Malay. Arch. 174. 1919; H. J. Lam, Bull. Jard. Bot. Buitenz., ser. 3, 5 (2): 178. 1922; H. J. Lam in Engl., Bot. Jahrb. 59: 92. 1925; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 67 & 103 (1942) and [ed. 2], 149 & 200. 1949.

This variety differs from the typical form of the species in having both surfaces of its leaflets, especially the lower surface, puberulent. It is said to be a tree 10--30 m. tall, with a trunk diameter of 100 cm., growing in woods at altitudes of 30 to 250 meters. It has been collected in anthesis in January, March, April, and July, and in fruit in March and April. The wood is said to be esteemed for building purposes in the Caroline Islands. Common names recorded for it are "fasè" and "vasari". Lam cites also Ledermann 6695, 6911, 7147, and 10421 from Northeastern New Guinea as cotypes.

Citations: CAROLINE ISLANDS: Corol: Kanehira 82 (N). BISMARCK ARCHIPELAGO: New Ireland: Peekel 10 (Bz--23974, Bz--23975). NEW GUINEA: Northeastern New Guinea: Waterhouse 357 [Herb. Yale School Forest. 29482] (N).

VITEX COLUMBIENSIS Pittier, Contrib. U. S. Nat. Herb. 20: 484--485. 1922.

Synonymy: Vitex colombiensis Pittier ex Hill, Ind. Kew. Suppl. 7: 252. 1929.

Literature: Pittier, Contrib. U. S. Nat. Herb. 20: 484--485. 1922; Rexord & Mell, Timbers Trop. Am. 525--527. 1924; Curran, Trop. Woods 19: 31. 1929; Hill, Ind. Kew. Suppl. 7: 252. 1929; Moldenke, Geogr. Distrib. Avicenn. 19. 1939; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 31 & 103. 1942; Moldenke, Phytologia 2: 118. 1944; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 62 & 200. 1949; Romero Castañeda, Caldasia 7 (31): 49--50. 1955.

Large leafy tree, to 25 m. tall; trunk to 30 cm. in diameter at the base; wood hard, heavy, taking polish well; bark smooth or slightly fluted, pale-castaneous; branchlets rather stout, very corky, obtusely tetragonal, irregular, gray, obscurely puberulent or glabrate, medullose; young twigs densely furfuraceous floccose and resinous-granular, usually acutely tetragonal or flattened and sulcate in drying, dark beneath the tomentum.